

WHAT IS CLAIMED IS:

1. A method for operating a gas generation device for a fuel cell system having at least two gas generation units through which a starting-material stream flows in sequence, and which have a first and second rated power and a first and second predetermined operating temperature, respectively, said method comprising:

providing the first gas generation unit with a lower thermal mass than the second gas generation unit;

during a starting phase of the gas generation device, operating only the first gas generation unit, with a power $P_{start_1} > P_{rated_1}$ or at an operating temperature $T_{start_1} > T_{start_1}$; and

after the end of the starting phase, operating at least the second gas generation unit.

2. The method according to Claim 1, wherein:

after the starting phase has ended, in the event of a low and medium load only the second gas generation unit is operated; and

the first gas generation unit is operated only when a required power exceeds the rated power P_{rated_2} of the second gas generation unit is required.

3. The method according to Claim 1, wherein:

the gas generation units are indirectly heated for endothermic steam reforming;

the first gas generation unit is operated during the starting phase at a temperature $T_{\text{start}_1} > T_{\text{rated}_1}$, and is supplied with at most a quantity of operating medium which corresponds to an instantaneously required power; and

after the end of the starting phase, the gas generation units are operated at predetermined operating temperatures.

4. The method according to Claim 1, wherein:

during the starting phase, at least the first gas generation unit, is also supplied with an oxygen-containing medium in addition to the operating medium;

at least the first gas generation unit is suitable for partial oxidation or for autothermal operation; and

during the starting phase at most a quantity of operating medium or quantity of oxygen-containing medium which corresponds to the power P_{start_1} is supplied.

5. The method according to Claim 3, wherein after the end of the starting phase, the first gas generation unit is supplied with only a quantity of oxygen-containing medium which is reduced compared to the maximum quantity reached during the starting phase.

6. The method according to Claim 5, wherein no oxygen containing medium is supplied.

7. The method according to Claim 4, wherein after the end of the starting phase, upon occurrence of a predetermined load rise, the first gas generation unit is supplied with oxygen-containing medium for a predetermined time.

8. The method according to Claim 2, wherein after the end of the starting phase, the first gas generation unit is supplied with oxygen-containing medium when a required power exceeds the rated power P_{rated_2} of the second gas generation unit.

9. The method according to Claim 4, wherein after the end of the starting phase, the first gas generation unit is supplied

with oxygen-containing medium when a required power exceeds the rated power P_{rated_2} of the second gas generation unit.

10. The method according to Claim 1, further comprising means for keeping the first gas generation unit warm.

11. The method according to Claim 1, wherein the starting phase has ended as soon as the components of the fuel cell system through which the product gas stream of the first gas generation unit flows have reached a predetermined operating temperature.

12. A method of generating fuel gas for a fuel cell system, comprising:

providing first and second gas generation units through which a reactant gas stream flows sequentially for generating said fuel gas, said first gas generation unit being upstream of said second gas generation unit, and having a thermal mass which is lower than a thermal mass of the second gas generation unit;

during a startup operating phase, operating only the first gas generation, with at least one of a power greater than a rated power thereof and an operating temperature greater than a rated operating temperature thereof; and

after completion of the startup operating phase, operating at least the second gas generation unit.

13. The method according to Claim 1, wherein:

after the starting phase has ended, in the event of a low and medium load only the second gas generation unit is operated; and

the first gas generation unit is operated only when a required power exceeds a rated power of the second gas generation unit is required.